



AUG 9 2 59 PM '94

HAZARDOUS MATERIALS  
MANAGEMENT DIVISION

August 8, 1994

Mr. Chuck Schwer  
VT Department of Environmental Conservation  
Hazardous Materials Management Division  
103 South Main St./ West Bldg.  
Waterbury, VT 05671-0404

RE: Petroleum Contamination at TriTown Sunoco on the Barre-Montpelier Rd. in Berlin, VT  
VTDEC Site #94-1590

Dear Mr. Schwer:

Enclosed please find the August 1994 *Report on the Investigation of Suspected Subsurface Petroleum Contamination* for the TriTown Sunoco site in Berlin, Vermont. Ms. Sharon Abbott of J.W. Sandri, Inc., has reviewed the report and requested that I forward a copy to you.

Please do not hesitate to call, should you have any questions or comments on the enclosed report.

Sincerely,

Kristen Underwood  
Hydrogeologist

Enc.

cc: S. Abbott, w/o encl.  
5944500

**REPORT ON THE  
INVESTIGATION OF SUSPECTED SUBSURFACE  
PETROLEUM CONTAMINATION**

**AT**

**TRI-TOWN SUNOCO  
BERLIN, VERMONT**

**VTDEC SITE #94-1590  
GRIFFIN PROJECT #5944500**

**AUGUST 1994**

**Prepared For:**

**J. W. Sandri, Inc.  
400 Chapman St.  
P.O. Box 760  
Greenfield, MA 01302-0760**

**Prepared By:**

***GRIFFIN INTERNATIONAL, INC.***  
**P.O. Box 943  
Williston, Vermont 05495  
(802) 865-4288**

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## I. INTRODUCTION

This report provides a summary of the tasks completed for the preliminary investigation of suspected subsurface petroleum contamination at the Tri-Town Sunoco station on the Barre-Montpelier Road (Rt. 302) in Berlin, Vermont (see Site Location Map in Appendix A). Results of the following investigative tasks performed by Griffin International, Inc., (Griffin) are presented: groundwater sampling and analyses; determination of groundwater flow direction; and assessment of sensitive receptors in the vicinity of the Tri-Town Sunoco site. Also provided are conclusions and recommendations for additional investigation. This work is being performed based on requests from Mr. Chuck Schwer of the Vermont Department of Environmental Conservation (VTDEC) in a letter to Ms. Sharon Abbott of J.W. Sandri, Inc. (Sandri), dated April 28, 1994. Work was performed in accordance with the May 10, 1994 *Work Plan and Cost Estimate for Subsurface Investigation of Suspected Petroleum Contamination* at the site prepared by Griffin and approved by the VTDEC.

## II. SITE BACKGROUND

Tri-Town Sunoco is located along the east side of the Barre-Montpelier Road (Route 302) in Berlin, Vermont, approximately 1.2 miles south of the intersection of Routes 2 and 302. The region is predominantly commercial. A Sears store and Bouchard Pierce Home & Appliance store are located in a building within 100 feet north of the Sunoco station, and a Midas automotive service store is located within 100 feet south of the station. Across Route 302 from the station, is a motel.

Land surface topography in the immediate vicinity of Tri-Town Sunoco is mostly level, having been locally altered by construction activities and addition of gravel and boulder fill. The station is located in the relatively narrow flood plain of Stevens Branch, a tributary to the Winooski River. Stevens Branch is located approximately 200 feet east of the station.

A 4000-gallon, single-walled, steel, gasoline underground storage tank (UST) was removed at Tri-Town Sunoco on March 21, 1994. The tank failed a tightness test conducted by Sandri in September of 1993. The tank was removed from service at that time. During the tank pull inspection, moderate rust, scaling, and pitting were observed on the exterior surface of the tank; however, no holes or other obvious signs of petroleum product release were observed. Three other USTs (each are 4000-gallon gasoline tanks) exist on site; these tanks passed the September 1993 tightness test and currently remain in service. Petroleum contaminated soils identified during the tank pull were replaced in the tank pit, after it was determined that there was no practical way at the time to excavate all the contaminated soils without disturbing the adjacent tanks.

### **III. INVESTIGATIVE PROCEDURES**

To determine the nature and extent of suspected subsurface petroleum contamination in the area of Tri-Town Sunoco, the following investigative tasks were undertaken as per the Work Plan: installation of three monitoring wells, site survey, determination of groundwater flow direction, groundwater sampling and analyses for petroleum-related constituents, and a sensitive receptor survey.

#### **A. Monitoring Well Installation**

On June 22, 1994, three shallow monitoring wells were installed at the site (see Site Map). The boreholes were installed utilizing hollow-stem auger drilling methods. Green Mountain Boring Co., Inc., of Barre, Vermont, installed the wells under direct supervision of a Griffin hydrogeologist. During borehole advancement, two-foot split spoon samples were collected from approximately every five feet. Soils were screened for hydrocarbon vapors using an HNu<sup>TM</sup> Model PI-101 portable photoionization detector (PID). Soil characteristics and contaminant concentrations were recorded by the hydrogeologist in detailed well logs which are presented in Appendix B. Due to the abundance of boulder fill in the subsurface, borehole advancement for MW-1 and MW-3 was difficult. Auger refusal was encountered in the borehole for MW-1 in two locations (see SB-1, and SB-2 on the Site Map) prior to successful completion of this well at the location indicated in the Site Map. SB-1 and SB-2 were completed to 8 feet and 5 feet below ground surface, respectively.

MW-1 was advanced to 12.5 feet below ground level, MW-2 to 17 feet, and MW-3 to 12.5 feet. Soils encountered in the boreholes of the three wells consisted generally of medium-brown to grayish brown, fine-grained sands and subrounded gravel, with minor percentages of silt. Boulders associated with fill material were encountered in MW-2 and MW-3 at an approximate depth of 7 to 11 feet below the ground surface.

Dark gray petroleum staining was observed in fine-grained sand, silt, and gravel sediments obtained from twelve to seventeen feet in MW-2. A strong petroleum odor was noted in sediments obtained from twelve to fifteen feet below ground surface. The maximum PID reading obtained in a plastic bag headspace analysis of sediments from this well was approximately 200 ppm from 10 to 12 feet below ground surface. No significantly elevated levels of volatile organic constituents (VOCs) were detected with the PID in MW-1 or MW-3. Approximately two cubic yards of petroleum-contaminated soils encountered in MW-2 were polyencapsulated and stored on the property approximately 30 feet southwest of MW-3.

#### **B. Determination of Groundwater Flow Direction**

The newly-installed monitoring wells and prominent site features were located in azimuth and elevation, relative to an arbitrary datum, during a site survey conducted on June 22, 1994. Survey data was utilized in generation of the Site Map contained in Appendix A.

Prior to groundwater sampling on June 29, 1994, each of the three newly-installed monitoring wells was monitored for presence of free floating product, and depths to water were measured. Results are tabulated as Liquid Level Monitoring Data in Appendix C. For each well, the measured depth to water was subtracted from the surveyed elevation of the measurement reference point, to determine the water table elevation. Water table elevations were plotted on the site map to generate the Groundwater Contour Map presented in Appendix A. June 29, 1994 groundwater elevation data indicated that groundwater flow was directed generally northeastward from the site; however, the calculated gradient (0.6%) was very slight.

### **C. Groundwater Sampling and Analyses**

A groundwater sample was collected from each of the three monitoring wells on June 29, 1994. Groundwater samples were analyzed by EPA Method 8020 by Alpha Analytical Laboratories of Westborough, Massachusetts. Quality control (QC) samples (a trip blank, duplicate sample, and equipment blank) were also collected. Analytical results are summarized in tabular form in Appendix D; drinking water standards are provided for reference in this summary table. Appendix D also contains the laboratory data sheets. Analytical results of the trip blank, duplicate, and equipment blank samples indicate that adequate Quality Assurance/ Quality Control was maintained throughout sample collection and analyses.

Benzene, ethylbenzene, toluene, xylenes, and MTBE were detected in MW-2 located closest to the former tank location. Benzene and MTBE were detected in MW-1 northeast of the former tank location. A relatively low concentration of MTBE was detected in MW-3 east of the tank pit location. Constituent concentrations detected in the monitoring wells were plotted on the site map to generate the Contaminant Distribution Map contained in Appendix A. This map indicates that petroleum constituents are migrating at least forty-five feet northeast of the former tank location and at least six feet west of the former tank location.

Benzene was detected at concentrations in excess of the EPA Maximum Contaminant Level (MCL) for this constituent in MW-1 and MW-2. Ethylbenzene, toluene, and xylenes were detected at levels exceeding the MCLs of these constituents in MW-2. MTBE in all three on site wells was reported at levels exceeding the VT Health Advisory Limit (VT HAL) for this constituent. While benzene was reported as not detected in MW-3, it should be noted that the sample-specific detection limit for benzene exceeded the EPA MCL. Thus, there is the possibility that benzene may have been present in this groundwater sample at levels exceeding the EPA MCL.

## **IV. RISK ASSESSMENT**

The area surrounding the Tri-Town Sunoco station was evaluated during the site visit conducted on June 22, 1994, to identify potentially sensitive receptors in the vicinity of the site. In addition, a review of State of Vermont files at the Agency of Natural Resources, Water Supply Division offices in Waterbury, Vermont was conducted on June 9, 1994, to identify the location of supply wells in the area of Tri-Town Sunoco. A groundwater well reportedly exists at the Mitsubishi

Garage within a half mile south of the Sunoco station on Rt. 302. There are no other known water supply wells in the immediate area. The Mitsubishi Garage supply well is reportedly a 150-foot flowing artesian well completed in bedrock, according to records contained in a site assessment report for the Capital Chrysler facility located within one-half mile south of Tri-Town Sunoco. Moreover, the Mitsubishi Garage well appears to be cross gradient from the Sunoco station according to groundwater elevation data obtained for both the Tri-Town Sunoco site and the Capital Chrysler site. This supply well was sampled on November 18, 1992, as part of a site assessment conducted at the Capital Chrysler facility. No petroleum-related constituents were detected. For these reasons, risk to the Mitsubishi Garage well posed by the subsurface petroleum contamination at Tri-Town Sunoco is likely to be minimal.

The Tri-Town Sunoco station is located along a four-lane road in a commercial corridor between Montpelier and Barre, Vermont. Buildings in the area are serviced by municipal water and sewer, except the Mitsubishi Garage which utilizes a groundwater supply well for its water source. The most likely sensitive receptors of subsurface petroleum contamination in the area of Tri-Town Sunoco are buildings, groundwater, and nearby surface water. The Tri-Town Sunoco station building is constructed on a concrete slab; thus, the likelihood of impact on building air quality by the adjacent subsurface petroleum contamination is likely to be minimal. No organic vapors were detected with the PID inside the building on June 22, 1994. Due to the absence of petroleum vapors inside the building and the absence of a basement in the building, there appears to be negligible risk to the Tri-Town Sunoco building.

The Stevens Branch flows in a northerly direction past the Tri-Town Sunoco site approximately 200 feet east of the station. On June 22, 1994, discharge was visually estimated at 10 to 15 cubic feet per second. Flow was both turbid and turbulent, owing to runoff from recent rain events. No petroleum sheen was observed. Given the relatively close proximity of the river to the station (within 200 feet) and given the degree of subsurface contamination detected in MW-1, petroleum contamination detected in the vicinity of the Sunoco station may have an impact on the Stevens Branch.

## **V. CONCLUSIONS**

Based upon the results of the above investigative tasks, Griffin presents the following conclusions:

- 1) Release of petroleum products to the subsurface in the vicinity of the former UST has resulted in adsorbed and dissolved contamination soils and groundwater, respectively.
- 2) No free phase product was detected in the three monitoring wells located in close proximity to the former tank location.
- 3) The lateral extents of petroleum contamination migration from the location of the former tank are undefined.

- 4) The groundwater table elevation in the immediate vicinity of the Tri-Town Sunoco station on June 22, 1994 was mostly level with a very slight gradient of 0.6%. Direction of groundwater flow was northeastward toward the Stevens Branch.
- 5) The most likely sensitive receptor to the subsurface petroleum contamination in the vicinity of the Tri-Town Sunoco is the Stevens Branch of the Winooski River. To date, there has been no reported impact on the Stevens Branch.
- 6) Over time, contaminant concentrations can be expected to decrease with the progressive action of natural mitigative processes, including dilution, dispersion, and biodegradation.
- 7) Approximately two cubic yards of petroleum-contaminated soils generated during the borehole advancement for MW-2 were polyencapsulated and stored on site.
- 8) The abundance of large boulders used for fill material in the subsurface east of the station, posed significant difficulty for drilling by hollow-stem auger methods.

## **VI. RECOMMENDATIONS**

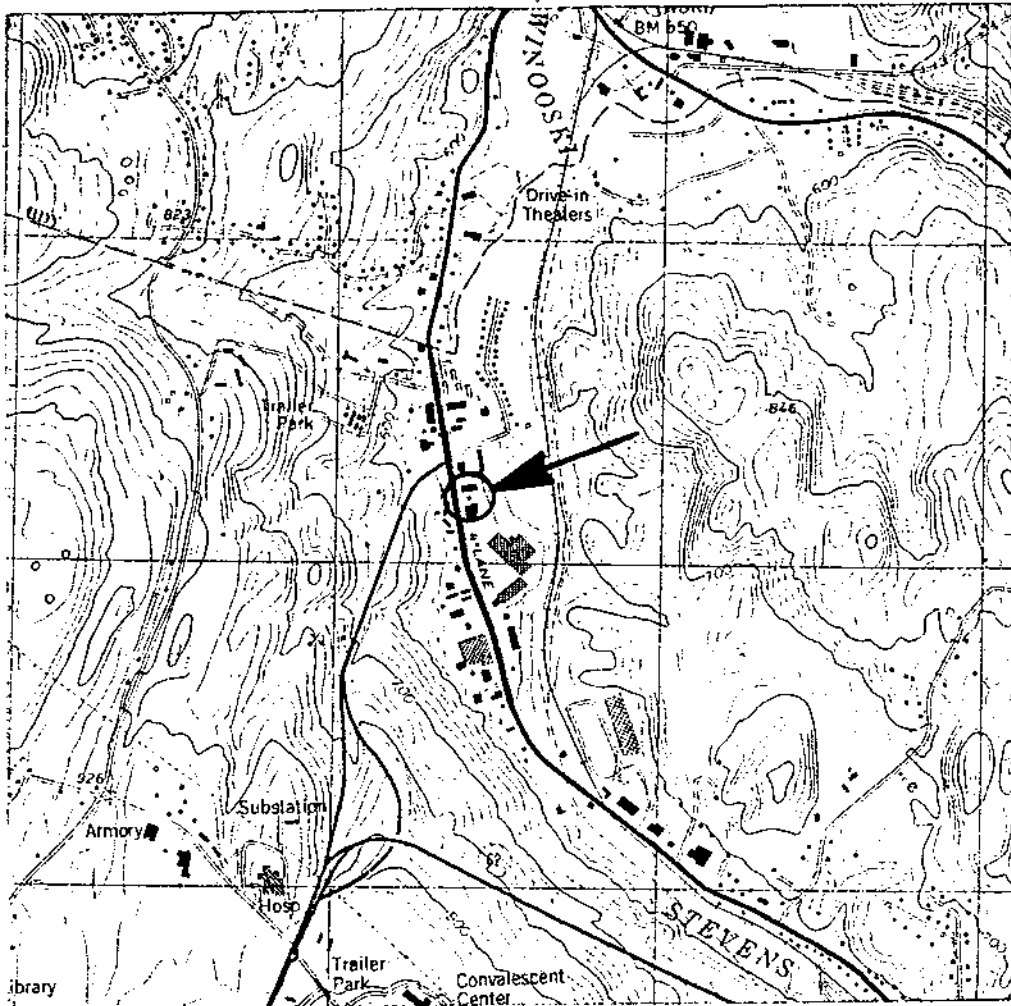
Based upon the above conclusions, Griffin offers the following recommendations:

- 1) To further define groundwater elevation and gradient, as well as lateral extents of contaminant migration at the site, at least two additional wells should be installed. One well should be located east of MW-1 between the site and the Stevens Branch to assess potential contaminant migration in a direction toward the Stevens Branch. A second well should be located on the property west to southwest of MW-2. Monitoring well installations by air rotary, spin-casing, or other drilling methods alternate to hollow-stem auger should be considered for installation of future wells at the site.
- 2) To track migration of subsurface petroleum constituents at the site and document expected reduction in contaminant concentrations, groundwater from on-site wells should be sampled and analyzed on a quarterly frequency for a period of at least one year. Samples should be analyzed by EPA Method 8020 for presence of petroleum-related constituents. After one year of monitoring, analytical data should be assessed to determine the need for additional site monitoring.
- 3) Polyencapsulated, petroleum-contaminated soils on the property should be screened with a PID and turned over periodically to track expected decreases in VOC concentrations with the progressive action of natural degradative processes, including volatilization and biodegradation.



## **APPENDIX A**

### **Site Maps**



CG # 5944500  
SOURCE: USGS - BARRE WEST, VT. QUADRANGLE



TRI-TOWN SUNOCO

BERLIN,

VERMONT

SITE LOCATION MAP

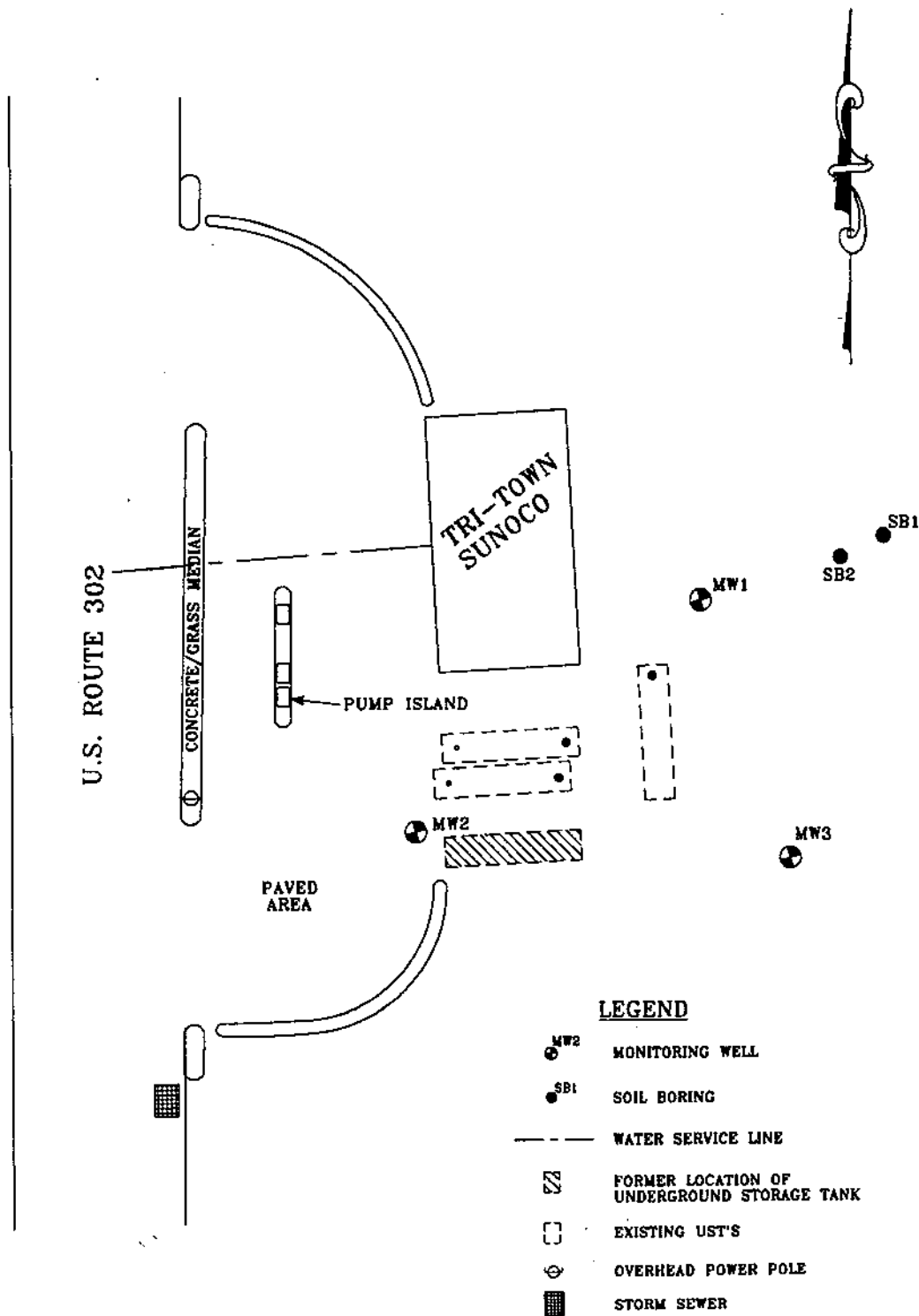
DATE 6/23/94

DWG#1

SCALE: 1:24000

DRN: SB

APP:KU



JOB #: 5944500



**TRI-TOWN SUNOCO**

**BERLIN,**

**VERMONT**

**SITE MAP**

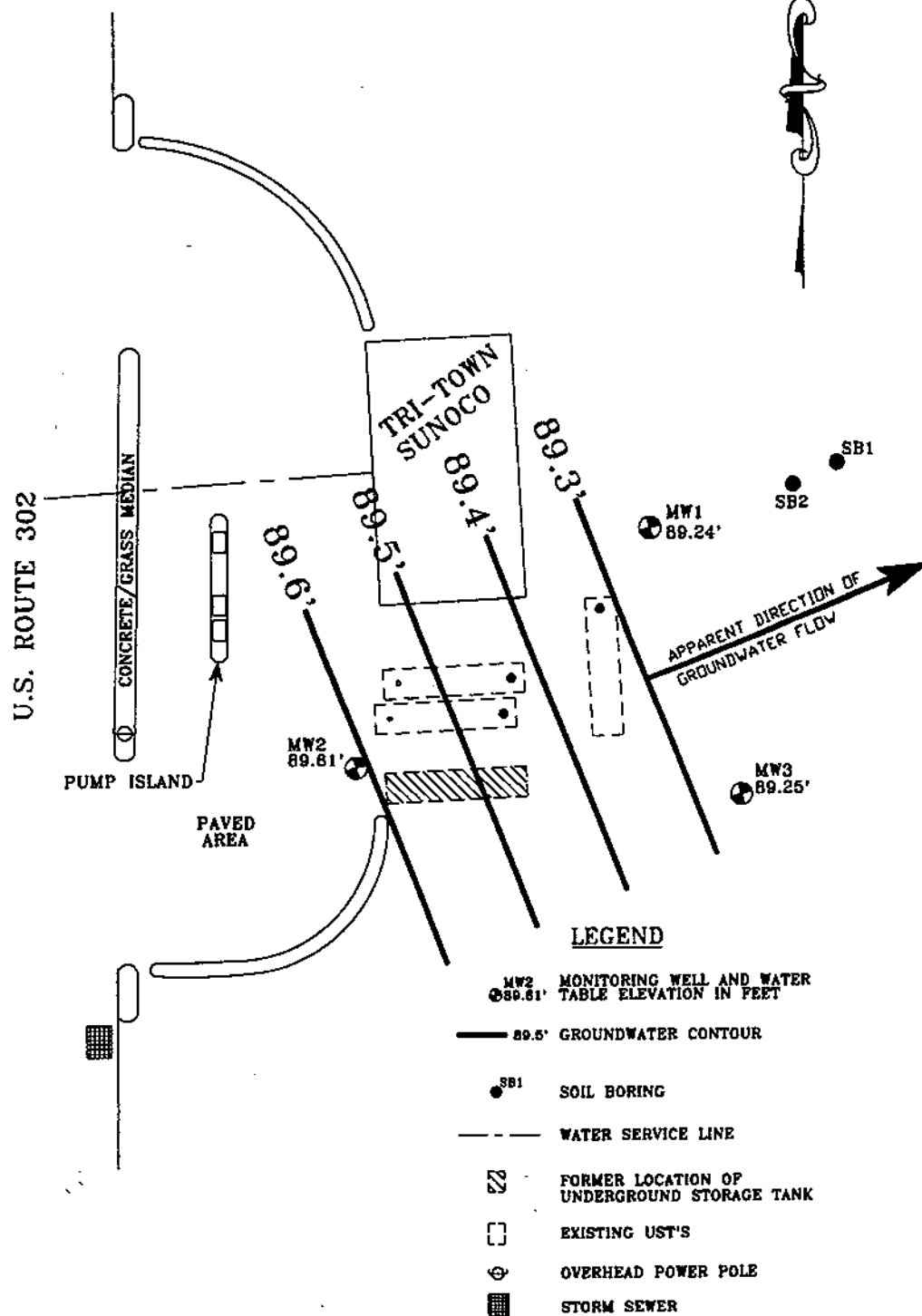
DATE: 7/20/94

DWG.#: 2

SCALE: 1"=30'

DRN: SB

APP: KU



JOB #: 5944500  
DATE MEASURED: 6/29/94



**TRI-TOWN SUNOCO**

BERLIN,

VERMONT

**GROUNDWATER CONTOUR MAP**

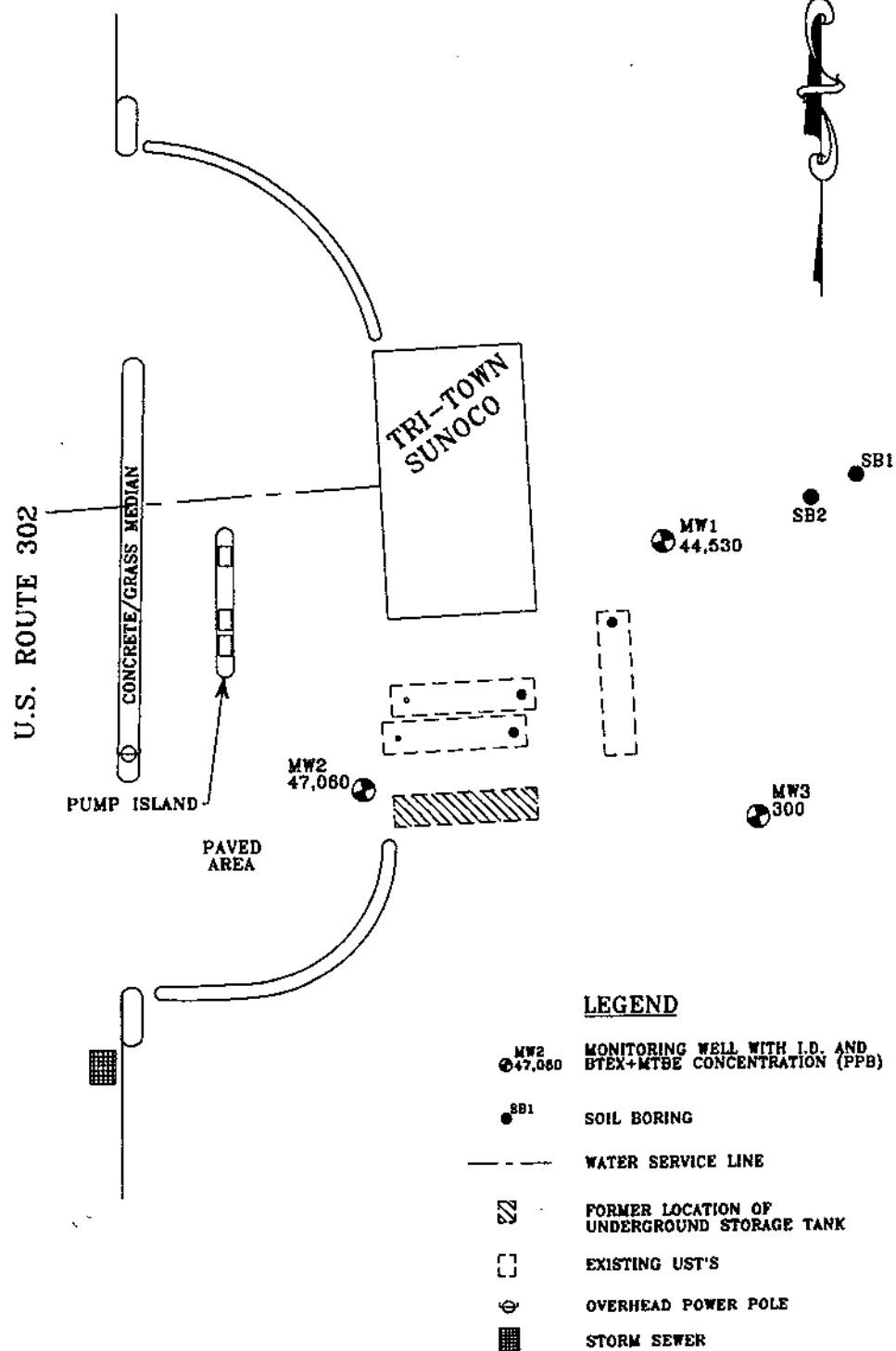
DATE: 7/20/94

DWG.#: 3

SCALE: 1"=30'

DRN.: SB

APP.:KU



JOB #: 5944500  
DATE SAMPLED: 6/29/94



TRI-TOWN SUNOCO

BERLIN,

VERMONT

CONTAMINANT CONCENTRATION MAP

DATE: 7/20/94

DWG.#: 4

SCALE: 1"=30'

DRN.: SB

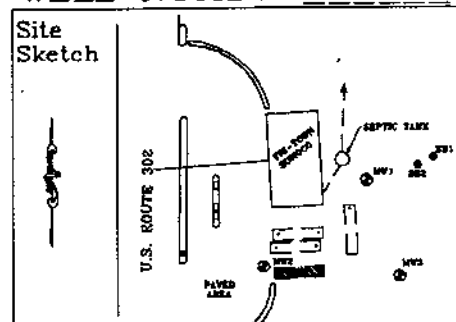
APP.:KU

**APPENDIX B**

**Monitoring Well Logs**

PROJECT TRI-TOWN SUNOCO  
 LOCATION BERLIN, VERMONT  
 DATE DRILLED 6/22/94 TOTAL DEPTH OF HOLE 12.5'  
 DIAMETER 6.25"  
 SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.010"  
 CASING DIA. 2" LENGTH 2.0' TYPE sch 40 pvc  
 DRILLING CO. GMB DRILLING METHOD HSA  
 DRILLER R. FINKLE LOG BY K. UNDERWOOD

WELL NUMBER MW1



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX LOCKING WELL CAP CONCRETE BENTONITE				0
1					1
2	WELL RISER				2
3					3
4				Medium brown to grayish brown fine grained SAND, w/subrounded fine to medium gravel, some silt, dry, no odor.	4
5					5
6	SAND PACK	5'-7'-9/6/9/21 2 ppm			6
7					7
8	WELL SCREEN				8
9					9
10					10
11		10'-12'- 12/1/9/28 0 ppm		11.0' WATER TABLE	11
12	BOTTOM CAP			Medium brown SAND and medium to fine GRAVEL, saturated.	12
13	UNDISTURBED NATIVE SOIL			Medium SILT and fine grained SAND saturated, no odor, no sheen.	13
14				BASE OF WELL AT 12.5' END OF EXPLORATION AT 12.5'	14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

PROJECT TRI-TOWN SUNOCO

LOCATION BERLIN, VERMONT

DATE DRILLED 6/22/94 TOTAL DEPTH OF HOLE 17.0'

DIAMETER 6.25"

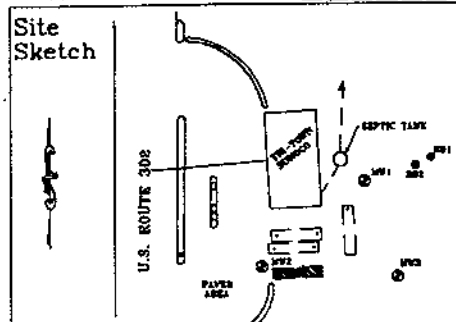
SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 6.5' TYPE sch 40 pvc

DRILLING CO. GMB DRILLING METHOD HSA

DRILLER R. FINKLE LOG BY K. UNDERWOOD

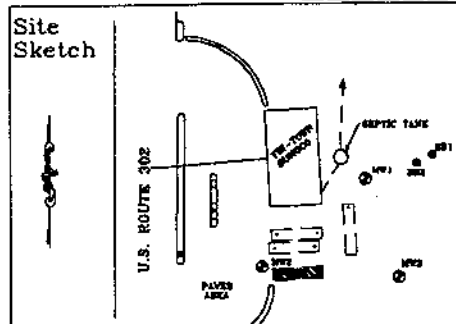
WELL NUMBER MW2



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX LOCKING WELL CAP				0
1	CONCRETE			Sand and gravel FILL	1
2	BENTONITE		1'-3'-7/9/13/12 0 ppm	Grayish brown fine grained SAND, with silt, dry, no odor.	2
3	NATIVE BACKFILL			Medium brown fine grained SAND, dry, no odor.	3
4	WELL RISER			Grayish brown fine grained SAND, trace of medium gravel, dry, no odor.	4
5	BENTONITE		5'-7'-2/2/2/4 0.5 ppm	Grayish brown SILT and CLAY, with gray/reddish brown mottling at 5.5' moist, no odor.	5
6					6
7					7
8	SAND PACK				8
9					9
10					10
11	WELL SCREEN		10'-12'-6/5/2/3 200 ppm	Medium brown fine grained SAND, w/ subrounded gravel, trace of silt, and a small confining layer of silt and clay from 11.2' to 11.5', moist, mild odor.	11
12					12
13					13
14				12.0' WATER TABLE	14
15				Dark gray fine grained SAND, with silt petroleum stained, strong odor, wet.	15
16	BOTTOM CAP		15'-17'-10/9/2/3 0.5 ppm	Medium brown fine grained SAND, trace of subrounded coarse gravel, wet.	16
17	UNDISTURBED NATIVE SOIL			Grayish brown SILT.	17
18				Dark gray fine GRAVEL with SAND, wet no apparent odor.	18
19				BASE OF WELL AT 17.0' END OF EXPLORATION AT 17.0'	19
20					20
21					21
22					22
23					23
24					24
25					25



PROJECT TRI-TOWN SUNOCOLOCATION BERLIN, VERMONTDATE DRILLED 6/22/94 TOTAL DEPTH OF HOLE 12.5'DIAMETER 6.25"SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.010"CASING DIA. 2" LENGTH 2.0' TYPE sch 40 pvcDRILLING CO. GMB DRILLING METHOD HSADRILLER R. FINKLE LOG BY K. UNDERWOODWELL NUMBER MW3

GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX	LOCKING WELL CAP			0
1	CONCRETE	BENTONITE			1
2	WELL RISER			Brownish gray fine grained SAND, w/subrounded to subangular gravel, some silt, dry, no odor.	2
3					3
4					4
5					5
6	SAND PACK		5'-7'-11/71/15/27 0 ppm	Medium brown fine grained SAND, and coarse to medium subangular gravel, moist, no odor.	6
7					7
8	WELL SCREEN			Boulders, no cuttings return.	8
9					9
10			10'-12' 3/6/21/50-2" 0 ppm	10.0' WATER TABLE	10
11	BOTTOM CAP				11
12	UNDISTURBED NATIVE SOIL			Dark gray SILT, some fine grained sand, trace of subrounded med. gravel, saturated, no odor.	12
13				BASE OF WELL AT 12.5' END OF EXPLORATION AT 12.5'	13
14					14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

## **APPENDIX C**

### **Liquid Level Data**

**Liquid Level Monitoring Data  
TriTown Sunoco  
Berlin, Vermont**

**Monitoring Date: June 29, 1994**

Well I.D.	Well Depth (ft)	Top of Casing Elevation (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Specific Gravity of Product	Hydro Equivalent (ft)	Corrected Depth To Water (ft)	Corrected Water Table Elevation (ft)
MW-1	12.5	99.52	-	10.28	-	-	-	-	89.24
MW-2	17.0	100.00	-	10.39	-	-	-	-	89.61
MW-3	12.5	98.79	-	9.54	-	-	-	-	89.25

## **APPENDIX D**

### **Groundwater Quality Data**

**Groundwater Quality Summary  
TriTown Sunoco  
Berlin, Vermont**

PARAMETER	MW-1	MW-2	MW-3	Quality Control Samples			Drinking Water Standards
				Duplicate (MW-2)	Trip Blank	Equipment Blank	
Benzene	530	260	ND	260	ND	ND	5.0 *
Chlorobenzene	ND	ND	ND	ND	ND	ND	100 *
1,2-DCB	ND	ND	ND	ND	ND	ND	600 *
1,3-DCB	ND	ND	ND	ND	ND	ND	600 **
1,4-DCB	ND	ND	ND	ND	ND	ND	75 *
Ethylbenzene	ND	3000	ND	3000	ND	ND	700 *
Toluene	ND	10000	ND	8400	ND	ND	1,000 *
Xylenes	ND	32000	ND	29000	ND	ND	10,000 *
Total BTEX	530	45260	ND	40660	ND	ND	-
MTBE	44000	1800	300	1800	ND	ND	40 **
BTEX+MTBE	44530	47060	300	42460	ND	ND	-

All values reported in ug/L (ppb)

ND - None Detected

TBQ - Trace, below quantitation limits

\* = EPA Maximum Contaminant Level

\*\* = VT Health Advisory Level

- = None available

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive  
Westborough, Massachusetts 01581-1019  
(508) 898-9220

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

CERTIFICATE OF ANALYSIS

Client: A.R. Sandri, Inc.

Laboratory Job Number: L9405179

Address: 400 Chapman Street

Invoice Number: 64637

Greenfield, MA 01301

Date Received: 30-JUN-94

Attn: Sharon Abbott

Date Reported: 14-JUL-94

Project Number: 5944500

Delivery Method: Fed Ex

Site: Tri-Town Sunoco

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9405179-01	TRIP BLANK	Berlin, VT
L9405179-02	MW-3	Berlin, VT
L9405179-03	MW-1	Berlin, VT
L9405179-04	EQUIPMENT BLANK	Berlin, VT
L9405179-05	MW-2	Berlin, VT
L9405179-06	MW-2 DUP	Berlin, VT

cc: Griffin International, Kristen Underwood

Authorized by: James R. Roth

James R. Roth, PhD - Laboratory Manager

RECEIVED 18 1994

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Date Received: 30-JUN-94

Date Reported: 14-JUL-94

Field Prep:       None

**Number & Type of Containers:** 1 Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATES PREP ANALYSIS
Aromatic Volatile Organics				1 8020	01-JUL
Benzene	ND	ug/l	1.0		
Toluene	ND	ug/l	1.0		
Ethylbenzene	ND	ug/l	1.0		
Xylenes	ND	ug/l	1.0		
1,2-Dichlorobenzene	ND	ug/l	1.0		
1,3-Dichlorobenzene	ND	ug/l	1.0		
1,4-Dichlorobenzene	ND	ug/l	1.0		
Chlorobenzene	ND	ug/l	1.0		
Methyl tert butyl ether	ND	ug/l	1.0		

07149401:14 Page 2

ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9405179-02 Date Received: 30-JUN-94  
MW-3  
Sample Matrix: WATER Date Reported: 14-JUL-94  
Condition of Sample: Satisfactory Field Prep: None  
Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATES PREP ANALYSIS
Aromatic Volatile Organics				1 8020	06-JUL
Benzene	ND	ug/l	25.		
Toluene	ND	ug/l	25.		
Ethylbenzene	ND	ug/l	25.		
Xylenes	ND	ug/l	25.		
1,2-Dichlorobenzene	ND	ug/l	25.		
1,3-Dichlorobenzene	ND	ug/l	25.		
1,4-Dichlorobenzene	ND	ug/l	25.		
Chlorobenzene	ND	ug/l	25.		
Methyl tert butyl ether	300	ug/l	25.		

Comments: \* Complete list of References found in Addendum I



ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9405179-03

Date Received: 30-JUN-94

MW-1

Sample Matrix: WATER

Date Reported: 14-JUL-94

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATES PREP ANALYSIS
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Aromatic Volatile Organics				1 8020	01-JUL
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Benzene	530	ug/l	10.		
Toluene	ND	ug/l	10.		
Ethylbenzene	ND	ug/l	10.		
Xylenes	ND	ug/l	10.		
1,2-Dichlorobenzene	ND	ug/l	10.		
1,3-Dichlorobenzene	ND	ug/l	10.		
1,4-Dichlorobenzene	ND	ug/l	10.		
Chlorobenzene	ND	ug/l	10.		
Methyl tert butyl ether	44000	ug/l	10.		

Comments: \* Complete list of References found in Addendum I

ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9405179-04 Date Received: 30-JUN-94  
EQUIPMENT BLANK  
Sample Matrix: WATER Date Reported: 14-JUL-94  
Condition of Sample: Satisfactory Field Prep: None  
Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATES PREP ANALYSIS
Aromatic Volatile Organics				1 8020	05-JUL
Benzene	ND	ug/l	1.0		
Toluene	ND	ug/l	1.0		
Ethylbenzene	ND	ug/l	1.0		
Xylenes	ND	ug/l	1.0		
1,2-Dichlorobenzene	ND	ug/l	1.0		
1,3-Dichlorobenzene	ND	ug/l	1.0		
1,4-Dichlorobenzene	ND	ug/l	1.0		
Chlorobenzene	ND	ug/l	1.0		
Methyl tert butyl ether	ND	ug/l	1.0		

Comments: \* Complete list of References found in Addendum I

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Date Received: 30-JUN-94

Date Reported: 14-JUL-94

Field Prep:       None

**Number & Type of Containers:** 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATES PREP ANALYSIS
Aromatic Volatile Organics				1 8020	01-JUL
Benzene	260	ug/l	50.		
Toluene	10000	ug/l	50.		
Ethylbenzene	3000	ug/l	50.		
Xylenes	32000	ug/l	50.		
1,2-Dichlorobenzene	ND	ug/l	50.		
1,3-Dichlorobenzene	ND	ug/l	50.		
1,4-Dichlorobenzene	ND	ug/l	50.		
Chlorobenzene	ND	ug/l	50.		
Methyl tert butyl ether	1800	ug/l	50.		

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**ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS**

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9405179-06      Date Received: 30-JUN-94  
    MW-2 DUP  
 Sample Matrix: WATER      Date Reported: 14-JUL-94  
 Condition of Sample: Satisfactory      Field Prep: None  
 Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATES PREP ANALYSIS
Aromatic Volatile Organics				1 8020	01-JUL
Benzene	260	ug/l	50.		
Toluene	8400	ug/l	50.		
Ethylbenzene	3000	ug/l	50.		
Xylenes	29000	ug/l	50.		
1,2-Dichlorobenzene	ND	ug/l	50.		
1,3-Dichlorobenzene	ND	ug/l	50.		
1,4-Dichlorobenzene	ND	ug/l	50.		
Chlorobenzene	ND	ug/l	50.		
Methyl tert butyl ether	1800	ug/l	50.		

Comments: \* Complete list of References found in Addendum I

ALPHA ANALYTICAL LABORATORIES  
QUALITY ASSURANCE MS/MSD ANALYSIS

Laboratory Job Number: L9405179

Parameter	MS %	MSD %	RPD
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Volatile Organics Spike Recovery by GC MS/MSD for sample(s) 01-06

1,1-Dichloroethene	81	94	15
Trichloroethene	85	95	11
Chlorobenzene	95	101	6
Benzene	87	93	7
Toluene	92	98	6
Ethylbenzene	94	101	7

ALPHA ANALYTICAL LABS  
ADDENDUM I  
REFERENCES

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1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.

